

is appreciable only at 24 months. Most of the trials included patients with metastatic breast cancer or multiple myeloma, with more limited data on patients with prostate cancer. Although bisphosphonates presumably work in a similar way in patients with bone metastases from other sites, the benefits may not be apparent since their survival is much shorter. Many studies have concentrated on assessing events related to the skeleton rather than on pain itself, but most clinicians would regard reductions in fractures and need for radiotherapy as good surrogate markers of a reduction in pain. These data are confirmed in a specific overview.⁹ Pamidronate has been the bisphosphonate most widely used, but newer third generation bisphosphonates (zelodronate, ibandronate) have been the subject of more recent studies.

Back pain merits a particular mention. If the patient describes a notable increase in the severity of the pain and a new severe nerve root pain (often describing it as "shooting," "sharp," or "like pins and needles") then an epidural component and a risk of spinal cord compression may be present. Traditionally, many patients are left until they develop neurological signs of paraplegia, by which time many will never walk again. The above symptoms in a patient with cancer are an indication for an urgent magnetic resonance scan and treatment (radiotherapy, surgery), to help the patient's pain and preserve his or her mobility.¹⁰

We can help patients with metastatic bone disease. Pain can dominate the lives of patients and their families; we owe it to them to use all therapeutic options to

control the pain. A clear management plan developed between patient, general practitioner, and oncologist will control the pain and often give patients the confidence to cope with their illness.

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Publishing tobacco tar measurements on packets

Figures for tar, nicotine, and carbon monoxide are misleading and should be removed

Admitting mistakes can be difficult, correcting them even harder. Labelling cigarette packets with tar yields (plus nicotine and carbon monoxide) was, and is, a mistake. The mistake was not in the conception of the low tar programme, or even in conducting it as a huge experiment with public health. The error was allowing the tobacco industry to control it.

The tar delivery of cigarettes is routinely measured with a machine and, with the exception of the United States, stated on the packet as a legal requirement in almost every country in the world. It is accompanied by measurement of nicotine and often carbon monoxide.

These measurements are now recognised to be misleading for two reasons, as is the simplistic concept of tar as a substance.^{1-2 w1} Firstly, human smoking patterns vary greatly and are not mimicked by the machine. Secondly, modern cigarette design facilitates compensatory smoking (over-inhalation), which may lead to the smoker taking in much greater amounts of tar and nicotine than are measured by the machine.³ The 1960s' word tar, often called total particulate matter, is a euphemism for what we now know is a chemical cocktail with at least 69 carcinogens and numerous toxins.⁴

This practice has a long history and was originally legitimised by the US Federal Trade Commission,¹ in an attempt to stop a "tar race" that had broken out

between manufacturers. It was further supported by the public health establishment, which was swayed by evidence that tar painted on mouse skin gave a tumour dose response analogous to the dose response between cigarettes and lung cancer and implied that "the lower the tar and nicotine content of cigarette smoke, the less harmful would be the effect."^{5 6}

This was a reasonable expectation in the context of the times, although the fundamental flaw in the concept was the lack of understanding of the dynamics of cigarette smoking and the extent to which they are driven by nicotine hunger. One did not expect that the tobacco industry would be devious or foolish enough to modify cigarette design in ways that made the modern cigarette at least as dangerous as its predecessor, despite a dramatic lowering of tar delivery.⁴ However, this was indeed what happened, and we now find the standard measurement allows the industry to fool both the system and the public.

As well as facilitating compensatory smoking by the use of ventilated filters,⁷ other qualitative design changes led to increases in carcinogens,^{8,2} specifically nitrosamines, which are plausibly involved in the well



Additional references w1-w4 are on bmj.com

documented swing from squamous carcinoma to adenocarcinoma of the lung.⁸ This swing can only be attributed to changes in the composition of cigarettes. The concentrations of nitrosamines produced by cigarettes vary greatly both within and between brands and are controlled by manufacturers.⁹⁻¹⁰ This particular group of carcinogens should, and can, be greatly reduced or eliminated as a matter of urgency.

Tar measurement and labelling has served the tobacco industry well. It has supported claims that cigarettes were light or ultralight and has seemingly, and falsely, reassured many smokers who might otherwise have quit the habit.¹¹⁻¹³

If the measurements on the packet are misleading, is any measurement needed at all? Well, yes. Regulated upper limits need to be set for smoke carcinogens and toxins as they are for car exhausts.¹² Some form of measurement is therefore needed for regulatory purposes, although not for labelling of packets, as no machine can mimic the variable habits of individual smokers.

Canada has shown the way.¹⁴ Manufacturers are required to submit reports on smoke emissions, under a testing system that eliminates filter ventilation by taping over the vents and raises puff volume from 35 ml to 55 ml, at puff intervals of 30 seconds instead of 60 seconds. This system is adequate for comparing and assessing brands for specified substances and, by eradicating the effect of filter ventilation on the smoking machine measure, may encourage the abolition of such filter ventilation. However, the Canadian government has not yet taken action to set upper limits based on what is reported and continues to require listing on the pack.

It is now eight years since the US National Cancer Institute recognised the fallacies of the testing system, but we still have a paradoxical and unsatisfactory situation. Whereas the purpose for which the tobacco industry uses the measurements—underpinning descriptors such as light and mild—is under attack, the labelling of the packet with misleading figures for tar, nicotine, and carbon monoxide, is not. Descriptors such as light and mild have been banned in the Euro-

pean Union and are the subject of litigation in the United States, so we are likely to see the end of them in developed countries quite soon.

The machine measured figures for tar, nicotine, and carbon monoxide should be removed from the packet, and a realistic measure must be established for regulatory purposes (as Canada has done). The current health warnings deal qualitatively with the risks of smoking very well, and misleading figures on the packet can only do harm.

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